

ABSTRACT

The invention relates to substrate material for X-ray optical components for X-rays of wavelengths λ_R , comprising a glass ceramic material with a glass phase made of amorphous material and with a crystal phase containing microcrystallites. The amorphous material has a positive thermal expansion and the microcrystallites have a negative thermal expansion, and the stoichiometric ratio of crystal to glass phase is set such that the thermal expansion α of the glass ceramic material, within a temperature range of 5 20°C to 100°C , is $< 5 \times 10^{-6}\text{K}^{-1}$, particularly $< 1 \times 10^{-6}\text{K}^{-1}$, whereby the average quantity of the microcrystallites is $< 2\lambda_R$, preferably $< \lambda_R$, particularly preferred $< 2/3 \lambda_R$, especially $< \lambda_R/2$. The invention is characterized in that the substrate material, after a surface treatment, has a roughness in the High Spatial Frequency (HSFR) range of $< \lambda_{R/100}\text{rms}$, preferably $< \lambda_{R/300}\text{rms}$.